

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of )

Revision of Part 22 and Part 90 )  
of the Commission's Rules to )  
Facilitate Future Development )  
of Paging Systems )

WT Docket No. 96-18

Implementation of Section 309(j) )  
of the Communications Act -- )  
Competitive Bidding )

PP Docket No. 93-253

To: The Commission

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Federal Communications Commission  
Office of Secretary

**REPLY TO OPPOSITIONS AND COMMENTS REGARDING  
CERTAIN PETITIONS FOR RECONSIDERATION AND CLARIFICATION**

Paging Network, Inc. ("PageNet"), by its attorneys and pursuant to 47 C.F.R. § 1.429(g), hereby replies to certain oppositions and comments regarding petitions for reconsideration and clarification of the *Second R&O* in the above-referenced proceeding.<sup>1</sup> In support of this Reply, the following is respectfully shown:

**I. Secondary And Grandfathered PCP Licenses Should Not Be Granted Full Co-Channel Protection**

In its Comments, American Paging, Inc. ("API") opposed the requests of PageNet, Arch Communications Group, Inc. ("Arch"), the Personal Communications Industry Association ("PCIA"), and ProNet, Inc. ("ProNet") that the Commission clarify or reconsider its inadvertent adoption of full co-channel protection for secondary and

<sup>1</sup> *Second Report and Order and Further Notice of Proposed Rulemaking*, WT Docket No. 96-18, PP Docket Nos. 93-253, released February 24, 1997 ("*Second R&O*").

grandfathered Private Carrier Paging ("PCP") systems.<sup>2</sup> As demonstrated by PageNet and others in this proceeding, the adoption of full co-channel protection for secondary and grandfathered PCP systems is unlawful because it is a taking under the Fifth Amendment to the Constitution and an impermissible retroactive rulemaking.<sup>3</sup>

A grandfathered PCP license is a license applied for prior to October 14, 1993,<sup>4</sup> which utilizes another licensee's exclusive channel. The grandfathered licensee chose not to expand or modify that license to obtain exclusive status. Under the Commission's previous rules, grandfathered licenses were entitled to protection from interference, but were required to share the channel with other grandfathered systems and/or a system that qualified for exclusivity.<sup>5</sup>

Secondary licenses were proposed as exclusive licenses on a PCP exclusive channel, but the licensee failed to construct a system that qualified for exclusivity<sup>6</sup> and was required to accept a significantly reduced status, or secondary status, as result. Under the rules, a secondary license may not cause interference to, and has no protection rights from, a system that qualified for exclusivity on the same channel.

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<sup>2</sup> Comments of API, filed on May 9, 1997, at 2-4.

<sup>3</sup> See e.g., Petition for Reconsideration of PageNet, filed on April 11, 1997, at 17-19

<sup>4</sup> See *Private Carrier Paging Systems at 929-930 MHz (Channel Exclusivity)*, 74 RR2d 131, 138, n. 64 (1993).

<sup>5</sup> *Id.* at 138, n 65.

<sup>6</sup> See old Section 90.495(c)(1) of the Commission's Rules.

The elevation of the secondary and grandfathered PCP licenses on PCP exclusive channels to full co-channel protection under Section 22.503(i) is unlawful because it diminishes the scope of the nationwide PCP licenses. Specifically, nationwide licensees are allowed to construct facilities on their nationwide channels anywhere as long as they protect systems that had previously acquired local or regional exclusivity and share the channel where necessary with grandfathered licenses. Without the clarification or reconsideration requested by PageNet and others, the adoption of Section 22.503(i) with respect to secondary and grandfathered licenses strips nationwide licensees of a valuable portion of their nationwide licenses because the nationwide licensees may now be prevented from serving area that they were previously licensed to serve. A nationwide PCP licensee is both an incumbent licensee and a geographic licensee. The Commission should clarify that no provision adopted in this proceeding diminishes the rights, privileges, and scope of the incumbent nationwide PCP exclusive licenses.

## **II. Flexibility Should Be Allowed In the Modification Of Incumbent Systems**

In its comments and reply comments in this proceeding, PageNet advocated simple rules that could be applied with minimum administrative burden on licensees and the Commission. In the reconsideration of the *Second R&O*, some parties are seeking the adoption of incumbent system modification provisions based upon propagation formulas.<sup>7</sup> Having reviewed the filings in this matter, PageNet now agrees that incumbent exclusive

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<sup>7</sup> Comments of AirTouch on Petitions For Reconsideration, filed May 9, 1997 at 18; Opposition and Comment of Arch, filed May 9, 1997 at 1-3; and Comments on Petitions for Reconsideration filed by ProNet on May 9, 1997.

licensees may need additional flexibility in the modification of their paging systems in order to serve the public adequately. PageNet believes that it would be appropriate to use a signal strength criteria as a measure when modifying exclusive incumbent systems within their pre-existing composite interference contour.

Formulas were proposed earlier in this docket. PageNet remains greatly concerned that the formulas proposed do not accurately reflect the true propagation characteristics of 900 MHz paging channels. Even though commenters did not reach a consensus regarding formulas, a consensus was reached with respect to signal strength thresholds at system border areas. These thresholds should be applied here with the "border" of an incumbent system being the edge of its existing composite interference contour as determined under Section 22.537 Table E-2 of the Commission's Rules. Specifically, on May 31, 1996, in the supplement to its reply comments in this docket, PCIA recommended that in the absence of an agreement among licensees, the Commission should limit the signal strength at the MTA borders to no more than 33 dBuV/m for a 90% predicted field using a method based on Okumura curves.<sup>8</sup>

PageNet continues to support PCIA's recommendations for geographic area border sharing among MTA licensees that do not reach an agreement with respect to sharing. PageNet also believes that this is the appropriate standard to apply to incumbent system modifications that will locate transmitters within or outside the composite service area, as defined by Section 22.537 Table E-1, of their incumbent systems, but within the composite

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<sup>8</sup> A copy of the May 31, 1996 PCIA filing is attached hereto.

interference contour of the system's existing transmitters as defined by Table E-2. As such, and as detailed below, PageNet supports the adoption of a signal strength threshold that will allow incumbent licensees to modify their systems within the existing composite interference contour.

As an initial matter, PageNet wishes to emphasize that the Commission properly adopted co-channel protection standards for 900 MHz paging based upon Tables E-1 and E-2 of Section 22.537 of the Commission's Rules. However, for modification of the incumbent systems to construct transmitters that could not be considered true "fill-ins" (i.e., transmitters whose service area is fully encompassed within the composite service area of a system), PageNet agrees that an alternative method in the form of a signal strength threshold could be used to take into account facilities specifically engineered to not exceed a 33 dBuV/m signal strength at the edge of the composite interference contour of the existing incumbent system transmitters as defined by Section 22.527 Table E-2. This would mean that signal strength thresholds could be used to allow incumbent licensees to place transmitters outside of their existing service contour on a permissive basis, because the additional transmitter would not expand the interference contour of the incumbent system.

The use of signal strength thresholds to locate transmitters should only be used in areas in which there are no overlapping service or interference contours from other incumbent systems. This means that, absent an agreement, in areas where incumbent interference contours overlap, neither incumbent licensee would be able to utilize the signal strength measure to place a transmitter in that overlapping area.

With respect to MTA geographic licensees, the exclusive incumbent should be able to place transmitters anywhere within its present composite interference contour, while the MTA geographic licensee maintains the standard co-channel protection separation of Sections 22.503 and 22.537 of the Commission's Rules. The balance herein established allows the MTA licensee to have significant flexibility in placing facilities throughout the remaining MTA, while the incumbent has at least the limited ability to serve immediately adjacent area within its existing composite interference customer.

PageNet wishes further to emphasize that nationwide PCP licensees are incumbent licensees with authorizations that were nationwide in scope prior to the adoption of the *Second R&O*. For this reason, non-nationwide incumbent exclusive licensees on nationwide PCP channels should not be able to use formulas or signal strength measures to modify their systems. Instead, these licensees should rely on the fill-in provisions currently adopted under the *Second R&O*. Under no circumstances should grandfathered and secondary licensees be allowed to modify their systems pursuant to signal strength thresholds.

### **III. The Commission Should Clarify Contiguous Transmitters And Doughnut Holes**

In their Comments, ProNet and AirTouch supported requests that the Commission clarify the term "contiguous" with respect to incumbent transmitters.<sup>9</sup> PageNet agrees that some clarification is warranted.<sup>10</sup> Like contiguous transmitters in the context of PCP

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<sup>9</sup> ProNet Comments at 9; AirTouch Comments at 15-16.

<sup>10</sup> Unlike future MTA licensees, nationwide licensees held licenses with a nationwide scope prior to the adoption of the *Second R&O*. For this reason, non-nationwide exclusive incumbent systems on nationwide channels should not be permitted to

(continued...)

exclusive systems, contiguous transmitters are those transmitters that have an unbroken chain of overlapping service areas as defined by Section 22.537 Table E-1. Inside a closed loop of a network of the "contiguous" service area contours, incumbent licensees should be able to cover previously unserved area, *e.g.*, doughnut holes in the composite service area, by using fill-in transmitters, if the composite interference contour of the incumbent system is not increased. Otherwise the incumbent licensee will have to seek permission from the geographic licensee or, if that permission is not fairly forthcoming, file a request to serve that area on a waiver basis.

As an example, an incumbent licensee could have two co-channel transmitters separated by a distance of 120 miles. The incumbent may argue that it should be able to serve the area between these two transmitters even though some of the area is outside the interference contour of both of its transmitters (in this example 20 miles of white space, but 80 miles from the edge of one service contour to the other) because the co-channel separation requirements would prevent the geographic licensee from placing a transmitter between the incumbent transmitters.<sup>11</sup> However, because service and interference contours are assumed to be circles, even though a geographic licensee could not place a transmitter directly between the two incumbent transmitters, the placement of additional incumbent transmitters

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<sup>10</sup>(...continued)

modify their systems under contiguous transmitters provisions, if adopted. Moreover, under no circumstance should secondary or grandfathered PCP licenses be able to modify their systems pursuant to contiguous transmission provisions.

<sup>11</sup> This example assumes the minimum co-channel separation for 900 MHz paging facilities. *See* 47 C.F.R. § 22.537.

to fill-out the area between the original two incumbent transmitters would prevent the geographic licensee from serving some area that it could have served if the incumbent were not allowed to fill-out its system (e.g., areas not directly between the two incumbent transmitter sites but above or below the center point of the line between the two transmitting sites). In addition, if the incumbent licensee discontinues one of these transmitters, new service area would be opened to the geographic licensee. If the fill-out transmitters had been allowed, this area would not then be available to the geographic licensee.

**IV. Geographic Licensee Construction Reporting Requirements Are Appropriate Only If The Commission Allows For The Flexible Modification Of Exclusive Incumbent Systems Based Upon Border Signal Strength Thresholds**

In its comments on petitions for reconsideration, AirTouch supported petitions that would require geographic licensees to notify incumbent co-channel licensees prior to activation of transmitters that are located closer than 70 miles from existing facilities, and require the geographic licensee to conduct interference testing prior to operation.<sup>12</sup> PageNet opposed this proposal because it added administrative burdens on the licensees and potentially on the Commission. If, however, the Commission adopts signal strength thresholds for the modification of incumbent systems on non-nationwide channels, PageNet agrees that notification and brief interference testing may avoid significant difficulties prior to the MTA licensee initiating service.

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<sup>12</sup> AirTouch Comments at 18-19.



**V. Expired Construction Permits Should Not Be Counted In Determining Composite Interference Contours Of Incumbent Systems**

In its Comments On Petitions For Reconsideration, ProNet requested that the Commission clarify that incumbents may count expired construction permits in their determination of composite interference contours.<sup>13</sup> Such request for clarification should be denied. This clarification, if adopted, would mean that any speculator or insincere permittee would be allowed to hold an area within a geographic license area without ever having built a system to serve the public. Loss of construction permits is due to non-construction of facilities within the time period specified by the permit.<sup>14</sup> If a permittee fails to construct, the permittee loses the authorization to construct the station, and is therefore not licensed to operate the facilities for which the construction permit had been issued. Accordingly, there is no public interest benefit or other compelling reason to justify the inclusion of expired construction authorizations for facilities that are neither built nor licensed within the composite contour of incumbent systems.

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<sup>13</sup> ProNet Comments at 7-8.


<sup>14</sup> See 47 C.F.R. § 22.142.

**WHEREFORE**, for the foregoing reasons, PageNet requests that on reconsideration of the *Second R&O* adopt or maintain its rules in accordance with this Reply.

Respectfully submitted,

**PAGING NETWORK, INC.**

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I hereby certify that I have, this 22nd day of May, 1997, mailed a copy of the foregoing "Reply to Oppositions and Comments Regarding Certain Petitions for Reconsideration and Clarification" via first-class mail, postage prepaid, to the following:

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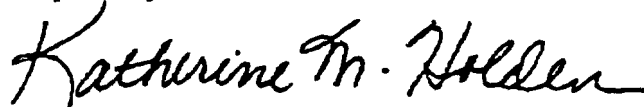
**Re: Supplemental Reply Comments of the Personal Communications Industry Association in WT Docket 96-18 (Revision of Point 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems) -- PCIA Recommendations - Geographic Licensing of 929/931 MHz Paging Systems, MTA Border Interference Protection**

Dear Mr. Caton:

In reply comments filed on April 2, 1996, with the Commission in the above-captioned docket, the Personal Communications Industry Association ("PCIA") represented it was working with industry members to develop a formula that would provide alternative means for reducing signal levels near the service area boundary to prevent interference while enabling a geographic licensee to provide service up to the market border. PCIA has now completed that effort, and enclosed are PCIA's recommendations, reflecting member consensus for defining interference protection on 929 and 931 MHz frequencies at the borders between MTAs (based on the Commission's proposal to define licensing areas using MTAs).

Should any questions arise concerning this submission, please contact either David Hilliard (202-429-7058) or me (202-429-7245).

Respectfully submitted,



Katherine M. Holden

cc: David Furth w/encl.

**PCIA Recommendations -  
Geographic Licensing of 929/931 MHz Paging Systems  
MTA Border Interference Protection  
WT Docket No. 96-18; PP Docket No. 93-253**

As the Commission recognized in its *NPRM*, efficient implementation of market-based geographic licensing will require a mechanism by which interference at MTA borders can be managed constructively. Accordingly, in its Comments PCIA volunteered to submit recommendations growing out of industry consultations aimed at developing an approach to border area interference. PCIA recommends that in the absence of negotiated provisions, the Commission limit the signal strength at MTA borders to no more than 33 dBuV/m for a 90% predicted field using a method based on the Okumura curves.<sup>1</sup> Licensees should be encouraged, however, to negotiate border sharing agreements with no specific overriding technical mandate. The 33 dBuV/m standard would apply in the absence of such agreements and in the absence of a grandfathered signal strength that is greater than 33 dBuV/m.<sup>2</sup>

*The Choice of a Border Field Strength*

Market area licensing will necessarily involve trade-offs as licensees configure systems in order to serve the public. For this reason, the Commission noted that a high degree of flexibility would be desirable and that licensees should be encouraged to negotiate and/or employ directional antennas so as to minimize the areas of mutual interference along borders. If too high a field strength were to be permitted at MTA borders, the potential for mutual interference would increase as systems placed interfering signals into neighboring MTAs. Selection of a signal strength that would be too low would create unserved areas by limiting the capability of licensees to avail themselves of the "front-to-back" signal suppression of directional antennas. Thus, with an extremely low border field strength, licensees would have to place their fringe area stations farther from the border. The result would be a decrease in the effective service within the MTA as licensees struggled to minimize the signal at the border.

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<sup>1</sup>Y. Okumura, E. Ohmori, T. Kawano, K. Fukuda - "Field Strength and its Variability in VHF and UHF Land-Mobile Radio Service," Rev. of Electrical Communications Laboratory, Vol 16., Sept.- Oct. 1968, pp 825-873.

A 33 dBuV/m signal strength gives 90 % predicted reliability according to Carey.

<sup>2</sup> Grandfathered licensees are those licensees who hold authorizations that were authorized prior to the adoption of geographic area licensing for paging carriers. As stated by PCIA in its Comments, grandfathered licensees should enjoy the same co-channel interference protection as they currently enjoy under the current paging rules.

After considering the minimal field strength needed to provide service and the desired-to-undesired ratio that describes interference, PCIA conferees recommend that the border field strength for non-grandfathered stations be limited to no more than 33 dBuV/m in the absence of a specific agreement to the contrary. Where unaffected by an interfering signal, 33 dBuV/m will provide a reasonable level of service to fringe areas. In the presence of an interfering signal, the area of interference will be tolerable, although the actual area will vary according to conditions.

#### *The Field Strength Prediction Method*

While PCIA generally favors the use of tables to simplify the determination of interference and service contours in the 929/931 MHz bands because of the simplicity and ease of application afforded by such a technique, border situations that involve the division of rights as between multiple licensees call for the use of a techniques capable of fine tuning and minimizing the area subject to interference. The Okumura method with terrain considerations stands out as one of the most reliable real-world radio wave propagation prediction methods. It can be applied by all engineers, lends itself to computerization, and should afford both the Commission and the industry a valuable tool for determining border area signal strength so as to minimize the amount of service to the public that is lost when adjoining licensees cannot otherwise agree among themselves as to the best method for managing their mutual interference. Accordingly, PCIA urges the Commission to adopt a standard of 33 dBuV/m predicted 90% field for the signals of non-grandfathered stations' signals at and beyond MTA borders. As applied, no non-grandfathered station would be allowed to place a signal greater than 33 dBuV/m at the border without having entered into an agreement with the adjoining licensee. Not only will this field strength be compatible with directional antennas, the prediction method will also allow engineers the flexibility to craft service areas using such traditional tools as height and power with confidence that urban, suburban, and rural conditions will be considered adequately in the prediction method.

The Okumura curves can be applied by using the Hata formula.<sup>3</sup> If a single method were to be selected, use of this formula would have the advantage of uniformity. It would not necessarily adequately characterize all situations because it does not take into account all of the correction factors inherent in the Okumura work. Accordingly, PCIA urges that applicants be permitted to use Hata, but that the Commission allow for other prediction methods based on the Okumura curves and correction factors to be employed in showing the location of the 33 dBuV/m contour. Such an approach might, for example, involve a computerized application of the Okumura curves that are relevant for the environment (e.g., urban, suburban, or rural) and the

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<sup>3</sup> M. Hata, "empirical Formula for Propagation Loss in Mobile Radio Services," IEEE Transactions on Vehicular Technology, vol. vt-29, 1980, pp. 317-325.



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appropriate correction factors. Permitting this flexibility, but requiring that it be clearly supported by an accompanying explanation, would be consistent with the approach used by the Commission in defining cellular border areas in which applicants are permitted to use alternative methods within defined limits.<sup>4</sup> In this case, the refinements of Okumura could be applied, provided that they are justified.

In sum, applicants would not be permitted to place a predicted 90% field in excess of 33 dBuV/m at and beyond the border in the case of non-grandfathered stations. In order to provide better service to the public, applicants and licensees would, however, be encouraged to negotiate with neighboring MTA cochannel license holders to work out other arrangements as an alternative to the 33 dBuV/m limit.

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<sup>4</sup>See Section 22.911(b) of the Commission's Rules. 47 C.F.R. §22.911(b) (1995).